

# RFID-Enabled Navigation and Communication Networks for Long-Duration Space Missions, Phase I

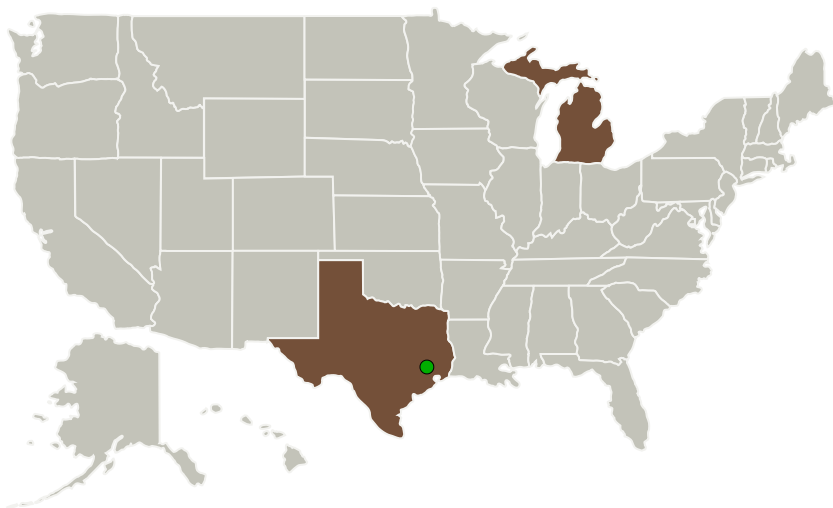
Completed Technology Project (2010 - 2010)



## Project Introduction

Virtual EM Inc. proposes a system that employs semi-passive RFID sensors with carbon nanotube inkjet-printed antenna and solar powered mesh-networked beacons. The tags will be powered by printed thin film batteries and/or via energy harvesting. Beacons will communicate among themselves and read the semi-active RFID tags worn by the astronauts. The location will be fixed via triangulation and this information will be beamed back to the astronauts.

## Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Virtual EM Inc.	Lead Organization	Industry	Ann Arbor, Michigan
● Johnson Space Center(JSC)	Supporting Organization	NASA Center	Houston, Texas

### Primary U.S. Work Locations

Michigan	Texas
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## Project Transitions

 **January 2010:** Project Start

 **July 2010:** Closed out

### Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/139403>)

## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Organization:

Virtual EM Inc.

### Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

### Program Director:

Jason L Kessler

### Program Manager:

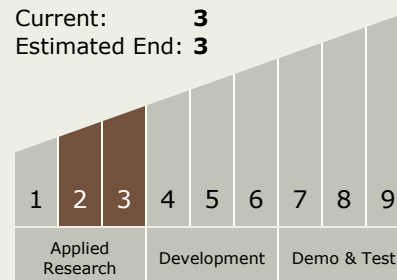
Carlos Torrez

### Principal Investigator:

Tayfun Ozdemir

## Technology Maturity (TRL)

Start: 2  
Current: 3  
Estimated End: 3



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## Technology Areas

### Primary:

- TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems
  - └ TX05.2 Radio Frequency
    - └ TX05.2.2 Power-Efficiency

## Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System